

III. FINDINGS OF THE STUDY

This chapter presents our estimates of the value of the output produced by students during work projects. Section A describes characteristics of the sampled work projects. Section B discusses our estimates of the number of student-days spent on work projects in Job Corps in one year. Section C discusses our estimates of the value of the output produced per student-day spent on work projects based on studies of 44 sampled projects. Section D discusses how our estimate of the value of output produced annually by students conducting work projects. Finally, Section E presents a discussion of the sensitivity of our estimates to alternative assumptions.

A. CHARACTERISTICS OF PROJECTS

To put our estimates in context, we begin by describing some of the characteristics of the projects in our samples. Table III.1 presents the percent distributions of the type of projects in three samples. The first sample consists of all projects that were worked on in the 23 selected centers in the reference months. The second sample consists of all projects that were worked on in the 23 centers in the reference months *excluding* those projects that are center-serving. By center-serving, we mean projects that reduce the operating costs of the center while not making any lasting improvements in the center's facilities. This second sample represents the sample frame for the selection of the projects to study. The third sample consists of the 44 projects that were studied in detail. We present the percentage distributions of both the number of projects and the number of student-days spent on projects. We weighted each observation in the first sample so that the distribution of types of projects represents the distribution of all work projects in all Job Corps centers. The weighted distributions of types of projects in the second and third samples represent

TABLE III.1
CHARACTERISTICS OF WORK PROJECTS
(Weighted Percentage Distributions)

Characteristic	All Projects in 23 Selected Centers		Projects Included in the Sample Frame ^a		Projects Selected for Study	
	Number of Projects	Student Training Days	Number of Projects	Student Training Days	Number of Projects	Student Training Days
Type of Work Project						
VST	42.0	79.0	37.8	74.3	34.3	73.0
WE ^b	58.0	21.0	62.2	25.7	65.7	27.0
Location						
On center	42.0	70.1	27.5	59.0	28.9	58.2
Off center	56.0	27.2	70.4	38.9	71.1	41.8
Both ^c	2.0	2.7	2.1	2.1	0	0
Type of Project by Location						
VST on-center	33.2	67.0	27.2	58.9	28.9	58.2
VST off-center	6.8	9.3	8.5	13.3	5.4	14.8
WE on-center	8.8	3.2	0.4	0.1	0	0
WE off-center	49.2	17.9	61.8	25.5	65.7	27.0
Projects that took place both on and off center	2.0	2.7	2.1	2.1	0	0
Project Comprises Multiple Smaller Projects	6.8	13.4	3.1	8.1	10.7	15.4
Number of Observations	504 projects	65,189 days	410 projects	47,559 days	44 projects	16,020 days

SOURCE: Tables completed by center staff prior to our visit to the center.

^aExcludes center-serving projects.

^bIncludes school-to-work projects.

the distributions of all work projects in all Job Corps centers, excluding those projects that are center-serving.

In the three reference months, students in the 23 centers worked on 504 projects, an average of 22 projects per center. On average, 2,834 student-days were spent on work projects at a center during the three reference months. However, the number of projects and the number of student-days spent on projects varied considerably by center. At one center, 6 projects took place in the three reference months; at another center, 62 projects took place during the reference months. The number of student-days spent on projects varied among centers from 1,286 to 6,391. The variation is even greater when we control for the size of the center--student-days spent on work projects in the reference months varied between 2 and 26 per student at the center.

VST projects account for only 42 percent of all projects but, because they typically involve more students than WE projects, they account for 79 percent of all student-days spent on projects. WE projects account for 58 percent of all projects and 21 percent of student-days spent on projects.¹ While the number of projects that take place off center is larger than the number of projects that take place on center, about 70 percent of student-days spent on work projects are spent on projects that take place on center. Most VST projects (79 percent) take place on the centers' facilities or grounds, while most WE projects take place in the community. Seven percent of all projects are VST projects that encompass multiple small projects that are grouped together under the same project number as a "miscellaneous" project when the VST plans are completed. These projects account for about 13 percent of all student-days spent on projects. About 2 percent of all projects take place both on and off center usually because the project encompasses multiple smaller projects.

¹This includes 20 school-to-work projects, just over 10 percent of all WE projects.

We excluded about one-fifth of the projects because they were center-serving. These projects were disproportionately large, they accounted for just over one-quarter of all student-days spent on projects. When center-serving projects are excluded from the sample, a somewhat higher proportion of both the number of projects and the number of student-days are spent on WE assignments. As, by definition, all center-serving projects take place on-center, a much higher proportion of non-center-serving projects are located off-center (70 percent compared with 56 percent of all projects). After excluding center-serving projects from the sample, a smaller proportion of projects are comprised of multiple smaller projects.

The projects we sampled to study in detail (excluding the two for which we were unable to complete the study) account for about 11 percent of all non-center-serving projects and about 34 percent of all student days spent on non-center-serving projects. By chance, a higher proportion of projects that comprise multiple small projects were chosen for the study than were represented in the sample frame.

Table III.2 presents the distribution of the trades that were involved in the work projects. Because we do not have data on the number of student-days spent on work projects by trade, the table presents the percent distribution of the *number* of work projects that involved students from each trade, but not the number of student-days by trade. In the whole sample, 25 percent of projects (26 percent in the sample frame and 29 percent of the sampled projects) provide training for students from more than one trade. About 40 percent of all work projects in the whole sample (37 percent of projects in the sample frame and 34 percent of the sampled projects) involved one or more construction trades. The construction trades most frequent involved in work projects are carpentry, building and apartment maintenance (BAM), and painting. After construction, work projects are most likely to involve clerical trades (20 percent of all projects in the whole sample and in the

TABLE III.2
TRADES INVOLVED IN WORK PROJECTS

Trade	Weighted Percentage of Projects that Involve Trade ^a		
	All Projects in 23 Centers	Sample Frame for Selection of Projects ^b	Sample of Projects
Multiple trades	25.4	26.1	29.1
Construction Trades			
Building and Apartment Maintenance (BAM)	17.4	15.8	12.4
Bricklayer	4.3	4.3	5.6
Carpentry	19.3	19.3	26.6
Electricity	1.2	1.5	1.2
Masonry	8.9	10.6	10.8
Painting	14.9	13.1	18.2
Plastering	2.9	3.5	7.7
Plumbing	4.6	4.4	4.7
Floor Laying	0.7	0.9	0
Any construction trade	40.1	36.6	33.5
Other Trades			
Automotive ^c	1.7	2.1	13.9
Electronics assembler	5.3	5.9	4.3
Welding	9.5	10.1	24.8
Landscaping	3.3	3.4	4.1
Lithographic printing	1.4	1.7	3.7
Clerical ^d	20.3	20.0	17.1
Food services	8.4	7.6	3.0
Health occupations ^e	12.4	12.7	4.7
Retail sales	1.5	1.4	0
Security	2.5	2.6	0
Other trades not listed	7.4	8.7	1.0

SOURCE: Tables completed by center staff prior to our visit to the center.

^aPercentages sum to more than 100 percent because some projects involved students from more than one trade.

^bExcludes center-serving projects.

^cIncludes automotive, auto body repair, auto parts clerk, and auto repair.

^dIncludes business and clerical occupations and accounting .

^eIncludes dental and medical assistant.

sample frame and 17 percent of all chosen projects) and health occupations (12 percent of projects in the whole sample, 13 percent of projects in the sample frame, and 5 percent of chosen projects). By chance, a slightly higher proportion of projects that involve painting, carpentry, automotive, and welding students and a slightly lower proportion of projects that involve food services, health occupations, and BAM, were selected for in-depth study than were in the sample frame.

B. NUMBER OF STUDENT-DAYS SPENT ON WORK PROJECTS

From the information provided by the centers before our visit, we calculated the number of student-days that were spent on work projects at each of the 23 centers during the three reference months. Table III.3 presents estimates of the number of student-days spent on all Job Corps work projects in 12 months for the whole sample of projects and only non-center-serving projects.² The estimates exclude any time spent on traveling to and from the work site, classroom training time, and time spent on hands-on training that did not result in a finished product. To put the estimates in context, we present the number of student-days spent on work projects per student-year by dividing the number of student-days by 34,340, the average number of students at Job Corps centers during the study.³

We estimate that in one year, students spent more than one million days (6 hours per day) on VST or WE projects. On average, students spent about 31 days per student-year on all work projects. About 79 percent of these days were spent on VST projects and 21 percent were spent on WE projects.

²Estimated standard errors are presented in Table C.1 in Appendix C.

³The figure 34,340 is a weighted average of the average number of students at the 103 centers in the sample frame in program year 95 and program year 96. The weights reflect the proportion of the reference months that fall in program year 95 (77 percent) and program year 96 (23 percent).

TABLE III.3

ESTIMATES OF THE NUMBER OF STUDENT-DAYS SPENT ON
 WORK PROJECTS IN ONE YEAR
 (Weighted)

Type of Project	All Work Projects		Work Projects That Are Not Center-Serving	
	Total Number of Student-Days	Number of Days Per Student-Year	Total Number of Student-Days	Number of Days Per Student-Year
WE	221,343	6	189,054	6
VST	830,757	24	547,280	16
All	1,052,100	31	736,334	21

Nearly three-quarters of a million days (about 70 percent of the total) were spent on non-center-serving projects--projects that result in a lasting improvement in the center facilities or grounds or serve the community. The remaining 30 percent of student-days were spent on center-serving projects--projects that reduced the operating costs of the center without resulting in lasting improvements to the center. On average, 21 days per student-year were spent on non-center-serving projects and 10 days per student-year were spent on center-serving projects.

Job Corps regulations (DOL 1993, PRH-4, page 11) state that students in the construction or repair trades or other trades that result in a finished product should spend at least 65 percent of their time in vocational training on VST projects. Some “back of the envelope” calculations suggest that the centers meet this requirement. We estimate that this requirement would be met if about 72 days per student-year were spent on VST projects by students in these trades. This assumes that (1) students are enrolled in vocational trades about 220 days per year,⁴ (2) once enrolled in a vocational program, students spend half their time in vocational training, and (3) students spend 65 percent of their time in vocational training on VST projects. Our study found that 830,757 student-days were spent on VST projects in Job Corps per year. Assuming that about 30 percent of all students were enrolled in a trade that involved VST projects (10,302 students) during the study, we estimate that 81 days ($830,757/10,302$) per year were spent on VST projects per student enrolled in a trade that uses VST projects for training.⁵

⁴This assumes that students do not work on 20 work days of the year because of federal holidays and other days in which the center closes because of holidays. It also assumes that students on average do not begin vocational training until they have been on center for 20 work days. During this time students may participate in programs such as the Occupational Exploration Program and English as a Second Language. Thus, out of 260 potential work days per year, we estimate that students are enrolled 220 days in vocational or academic training.

⁵In 1996, about 30 percent of all trainees trained in a construction trade.

It is also useful to compare our estimate of the number of student-days spent on work projects per student-year with the estimates from a previous evaluation of Job Corps (Long 1979) conducted in 1977-78. In this previous study, it was estimated that students spend 69 days on work projects per student-year, a much higher figure than our estimate of 31 days. We believe that differences in methodology rather than real changes account for the difference between the two studies in the estimates of the number of work days spent on work projects. In the previous study, the number of student-days was estimated by asking staff at the sampled centers in April or May how many students at the centers were working on work projects and dividing this by the number of students at the centers. The researchers found that 26.6 percent of students were working on work projects at the time they called. The number of student-days was estimated by applying this percentage to the number of work days in the year (26.5 percent of 260 days). We identified the following differences in approach that appear to fully account for the difference between our estimate and the estimate made in the previous study:

- ***The previous study considered a day when a student worked on the project for any length of time to be a “student-day.”*** In this study, we asked for the number of *hours* spent on the projects and then converted the hours to days by dividing by 6. If we replicate the previous methodology with our data--counting a day as one day if a student had worked on the project at all--our estimate of the total number of student-days spent on the project increased by 7.9 percent. Hence, if the previous study had used our methodology, and the differences in the estimates were the same as they are in our data, their estimate would have been 64 days per student-year.
- ***The previous study assumed that students work every weekday during the year.*** Job Corps centers, however, observe federal holidays and are closed between Christmas and New Year. A more realistic assumption is that they work 240 days a year. Further adjusting for this difference, the previous estimate would have been 59 days per student per year.
- ***The previous study assumed that students work on projects at the same rate throughout the year as they do in April and May.*** However, because the weather is good, spring is typically a heavy season for VST projects. We found that the number

of student-days spent on work projects in the six centers with reference months of April, May, and June was 2.1 times greater than the average for all centers. This suggests large seasonal differences in the amount of time spent on work projects. If the estimate in the previous study was twice as large because it was based on data from the spring, and we make the appropriate adjustments, their estimate of the amount of time spent on work projects would be 30 days per student-year.

C. VALUE OF OUTPUT PRODUCED PER STUDENT-DAY ON WORK PROJECTS

We based our estimates of the value of output produced per day on in-depth studies of 44 projects. None of the 44 projects are center-serving. Table III.4 lists the 44 projects with the estimate of the value of output produced per student-day on each project. Appendix B describes each project and summarizes the derivation of our estimate of the value of output for the project.

When interpreting our estimates of the value of output it is important to keep in mind that training the students is the primary objective of the Job Corps work projects and producing output is a secondary objective. Our estimates explicitly do not capture the training element of the projects. A project whose output per student-day is low may still provide a rich training environment for the students.

Estimates of the value of output produced per day vary greatly across projects, as they did in the previous Job Corps study, ranging from 12 cents to \$113.31. The differences reflect the large variation in the types of projects that are conducted and the skill level of the students that are assigned to different work projects.

Estimates of the (weighted) average value of output produced by students working on non-center-serving projects are presented in Table III.5. (Standard errors of these estimates are presented in Table C.2 in Appendix C.) On all non-center-serving projects, the average value of output is \$39.00 per student-day and \$6.50 per student-hour. The average value of output produced per student-hour is \$5.49 for the 31 VST projects and \$7.01 for the 13 WE projects. The higher value

TABLE III.4
ESTIMATES OF THE VALUE OF OUTPUT PER STUDENT-DAY

Project Number	Description	VST or WE Project	On or Off Center	Value Per Student Day
1.	Providing nursing duties at a local air force base	WE	Off	\$41.40
2.	Constructing a storage building on the center	VST	On	\$37.62
3.	Painting a forest service warehouse	VST	Off	\$31.80
4.	Building a mock-up wall in the center's paint shop	VST	On	\$70.61
5.	Working at a printing shop at a local college	WE	Off	\$31.38
6.	Working in the food service department at a local college	WE	Off	\$31.38
7.	Welding at a privately-owned manufacturing company	WE	Off	\$61.38
8.	Renovating a porch on a center building	VST	On	\$27.17
9.	Constructing a baseball dugout at a local high school	VST	Off	\$23.17
10.	Constructing a new dormitory on the center	VST	On	\$49.00
11.	Constructing a storage building on the center	VST	On	\$19.26
12.	Constructing picnic tables for use on the center	VST	On	\$43.76
13.	Maintenance work at an apartment complex	WE	Off	\$69.73
14.	Renovating a bathroom in a senior community center	VST	Off	\$15.36
15.	Constructing a BAM shop and warehouse on the center	VST	On	\$15.28
16.	Installing a sprinkler system on the center	VST	On	\$18.03
17.	Building identification signs on the center	VST	On	\$4.95
18.	Working at a private auto paint and body shop	WE	Off	\$49.84
19.	Building and staining a bookcase	VST	On	\$21.22
20.	Renovating the painting shop on the center	VST	On	\$24.91
21.	Remodeling an instructional building on the center	VST	On	\$7.18
22.	Refurbishing the electrical shop on the center	VST	On	\$8.55
23.	Providing nursing assistance at a local convalescent home	WE	Off	\$39.18
24.	Adding to the nonresidential building on the center	VST	On	\$21.46

TABLE III.4 (continued)

Project Number	Description	VST or WE Project	On or Off Center	Value Per Student Day
25.	Adding to the center's administrative building	VST	On	\$35.38
26.	Performing clerical work at a local community college	WE	Off	\$38.02
27.	Building a concrete pad and shelter on the center	VST	On	\$23.36
28.	Building a shade house on the center	VST	On	\$19.18
29.	Making cigarette butt containers for use on the center	VST	On	\$4.87
30.	Building a brick wall on the center	VST	On	\$8.49
31.	Rehabilitating the math area on the center	VST	On	\$19.09
32.	Rehabilitating the bricklayers' classroom on the center	VST	On	\$64.31
33.	Replacing a door to the transportation shop on the center	VST	On	\$4.12
34.	Replacing storm windows on a center building	VST	On	\$2.77
35.	Building furniture for a patio on the center	VST	On	\$0.12
36.	Landscaping at a local apartment complex	WE	Off	\$48.93
37.	Building an entrance to a dormitory on the center	VST	On	\$113.31
38.	Performing clerical work at a local employment service office	WE	Off	\$30.76
39.	Welding at a private manufacturing company	WE	Off	\$36.00
40.	Building student lockers on the center	VST	On	\$46.95
41.	Conducting two "miscellaneous" community projects	VST	Off	\$59.70
42.	Welding at a private manufacturing company	WE	Off	\$51.00
43.	Constructing the carpentry shop roof on the center	VST	On	\$88.31
44.	Providing patient care at a local Veteran Affairs hospital	WE	Off	\$81.36

TABLE III.5

ESTIMATES OF THE AVERAGE VALUE OF OUTPUT PRODUCED PER
STUDENT-DAY SPENT ON NON-CENTER-SERVING PROJECTS
(Weighted)

Type of Project	Average Value Per Student-Day	Average Value Per Student-Hour
WE	\$42.06	\$7.01
VST	\$32.94	\$5.49
All	\$39.00	\$6.50

per student-hour spent on WE projects compared with VST projects is consistent with our expectations that students working on WE projects (who are near the end of their training) will have achieved higher skill levels than students working on VST projects (who may have just begun their training).

Because the value of output in each WE project was estimated by the relative-productivity approach, we know the hourly wage of the alternative worker for students conducting WE projects. In the studied WE projects, the alternative worker would be paid between \$4.75--the federal minimum wage at the time of the study--and \$8.67 per hour. On average, they were paid \$6.47 per hour. In seven WE projects, the students' supervisors rated the students as equally productive as the alternative worker, said the student used the same amount of materials and supplies, and said that they required the same amount of supervision. The student was rated as less productive, used more materials or supplies, or required less supervision in only two WE projects. In the remaining four WE projects, students were either *more* productive, used *less* materials or supplies, or required *less* supervision than the alternative worker. The average wage of students in WE assignments is about 8 percent higher than the \$5.98 average hourly wage for Job Corps students who were placed in program year 1995 (DOL 1997).

Our estimates of the value of output per student-day are within the same range as those from previous studies. Table III.6 presents estimates of the output value produced in Job Corps and other employment programs from previous studies. Accurate comparisons across studies are difficult because of differences in methodology between studies. Different studies estimate the value of output over different observation periods (such as a hour, a day, or week) sometimes without reporting how long a student works on the project during this time period. Also, different studies remove different costs from their estimates. The previous Job Corps study, for example, did not

TABLE III.6
COMPARISON OF ESTIMATES OF VALUE OF OUTPUT
FROM PREVIOUS STUDIES

Program	Study	Value of Output (1996 Dollars)
Job Corps	Long (1979, pp. 28-29)	\$35.50 per day ^a
Employment Opportunity Pilot Project	Long, Thornton, and Whitebread (1983, p. 145)	\$223.35 per week
Youth Employment Projects funded under the Comprehensive Employment and Training Act	Zimmerman and Masters (1978, p. iii)	\$6.68 per hour
Supported Work	Kemper and Long (1981, p. 164)	\$1.59 per hour ^b

^aOnly for WE projects

^bAll supervision costs are subtracted from the estimate.

subtract from the value of output the material costs incurred by Job Corps during VST projects but included those costs in the cost part of the benefit-cost analysis. In our study, we subtracted the costs of materials and supplies from the supply price, but we will not include the costs of materials and supplies used in VST projects (and paid out of VST funds) as a cost in the benefit-cost analysis.⁶ This methodological difference affects the estimate of the output value but will not affect the difference between the value of benefits and costs. There are no VST materials and supplies used for the WE projects, so we can compare the value of output produced by WE projects across the two studies. The estimate made in the previous Job Corps study of the value of output produced per day during WE projects (\$35.50 per day) is about 16 percent lower than our estimate. The estimates from the Supported Work Evaluation are much lower than our estimates because all costs of supervision were subtracted from the supply price in that study.

D. ESTIMATES OF THE VALUE OF OUTPUT PRODUCED ANNUALLY DURING WORK PROJECTS

Table III.7 presents estimates, by type of project, of the total value of output produced by Job Corps students in one year and the total value of output produced per student-year. (Standard errors of these estimates are presented in Table C.3 in Appendix C.) These estimates were derived by summing over the value of the output created by the students working on each studied project during the reference months. Each project was weighted so that the sum represents the total value created in all Job Corps in one year during work projects that were not center-serving.⁷

⁶We chose this methodology so that we would be able to compare the value of output between WE and VST projects.

⁷This is not mathematically equal to the product of the number of student-days spent on work projects and the average value of output produced per student-day.

TABLE III.7

ESTIMATES OF THE VALUE OF OUTPUT PRODUCED ANNUALLY BY JOB CORPS
STUDENTS WHILE WORKING ON NON-CENTER-SERVING PROJECTS
(Weighted)

Type of Project	Total Value of Output	Value Per Student-Year
WE	\$9.2 million	\$266.85
VST	\$17.9 million	\$521.95
All	\$27.1 million	\$788.79

We estimate that students produce output and services worth more than \$27 million per year while participating in non-center-serving work projects. This is equal to about \$789 per student-year. Sixty-six percent of this value is produced during VST projects and 34 percent is produced during WE projects.

An estimate of the value of output per *student* will be included in the benefit-cost analysis. This estimate will be derived by multiplying the estimate of the value of output per student-year (\$789) by an estimate of the average length of stay of students in the sample derived for the impact analysis. We have not yet obtained an estimate of the length of stay of students in our sample. However, in PY95, the average length of stay was 6.9 months (DOL 1997). If the average length of stay of students in our impact analysis is equal to this average, the benefit from the output produced during non-center-serving work projects included in the benefit-cost analysis will be \$454 ($6.9 \div 12 \times \789).

As we discussed in Chapter II, the value of center-serving projects will be implicitly included in the cost part of the benefit-cost analysis in lower than otherwise center-operating costs. Hence, including the value of the center-serving projects in the benefit part of the benefit-cost analysis would double count the benefit. For this reason, we did not study in detail any center-serving project. But because 30 percent of student-days are spent on center-serving projects, we present some estimates of the value of these projects--the reduction in center-operating costs--in Table III.8. As we did not estimate the value of the output produced per day students worked on center-serving projects, we based our estimates on three different assumptions. Depending on the assumption, the estimates of the reduction in center-operating costs that result from students working on the center vary from \$288 to \$359 per student-year. First, we assume that, on average, an hour spent by a student on a center-serving project yields output of the same value as an hour spent on a non-center-

TABLE III.8

ESTIMATES OF THE REDUCTION IN ANNUAL CENTER-OPERATING COSTS
RESULTING FROM JOB CORPS STUDENTS PARTICIPATING IN
CENTER-SERVING WORK PROJECTS

Assumption About the Value of Output Produced Per Student-Hour	Estimate of the Value of Output Per Student- Hour	Number of Student-Days Spent on Center- Serving Work Projects	Total Value of Output	Value Per Student-Year
1. Equal to the average value produced during non-center-serving projects	\$6.50	315,766	\$12.3 million	\$359
2. Equal to the average value produced during non-center-serving projects, by type of project	\$5.48 (VST) \$7.01 (WE)	283,477 (VST) 32,289 (WE)	\$10.7 million	\$311
3. Equal to the minimum wage plus legally- required benefits	\$5.23	315,766	\$9.9 million	\$288

serving project (\$6.50 per student-hour). Under this assumption, we estimate that the value of output of center-serving projects would be \$12.3 million per year (315,766 student-days per year x \$6.50 x 6 hours per day) or \$359 per student-year (\$12.3 million ÷ 34,340). Second, we assume that, on average, an hour spent by a student on a VST center-serving project yields output of the same value as an hour spent on a VST non-center-serving project and an hour spent by a student on a WE center-serving project yields output of the same value as an hour spent on a WE non-center-serving project. Under this assumption, because a higher proportion of center-serving projects are the relatively lower-value VST projects, we estimate a lower value of output per student-year of \$311. Third, a low estimate of \$288 per student-year is obtained if we assume that the value of output per student-hour produced during center-serving projects is equal to the minimum wage (\$4.75 at that time) plus the value of legally-required benefits for service workers in state and local governments (about 10 percent of the wage).

While the output produced during both center-serving and non-center-serving projects is significant, it is only a small fraction of the operating costs of Job Corps. The operating costs of Job Corps (in all centers) was nearly \$26,000 per student in program year 1995. The output produced during non-center-serving work projects offsets only about 3 percent of these costs. Students working on center-serving projects offset only another 1 to 1.5 percent of the total operating costs of the center.

E. SENSITIVITY OF ESTIMATES TO ALTERNATIVE ASSUMPTIONS

While we believe that our estimates are reasonable, we made several important assumptions when making these estimates. To assess their appropriateness, we discussed the assumptions with center staff and other staff involved in the work projects. This section discusses what we learned

about the appropriateness of each assumption. It also discusses the sensitivity of our estimates to these assumptions.

1. Someone Would Be Willing to Buy the Students' Output at the Supply Price

Using the supply-price as a measure of the value of output assumes that someone is willing to pay that price for the output of the students. If no one is willing to pay the supply price, the supply price is an overestimate of the true value. For example, the supply price of a training project that involved students digging a hole and then filling it in would be the cost of paying a laborer to dig the hole and fill it in. But the true value of the output would be zero.

To assess whether someone would be willing to pay the supply price for the output of the students, we asked the VST coordinator or the representative of the off-center site the following questions:

- If Job Corps students had not done this work as a WE/VST project, do you think the work would have been done anyway by someone else?
- Would it have been done at the same time or would it have been postponed?
- Would the work have been done differently?

Not surprisingly, respondents had difficulty with these hypothetical questions. The questions require the respondents to think about a hypothetical situation--what *would* have happened if the work projects had not been performed by the students. Many respondents felt they did not have the knowledge to provide informed answers. This should be borne in mind when interpreting the responses to these questions.

Table III.9 summarizes the responses to these questions, by whether the project was conducted on- or off-center. According to the respondents, more than one-third of the projects (16 out of 44)

TABLE III.9

PERCEPTIONS OF WHETHER, WHEN, AND HOW WORK PROJECTS WOULD
HAVE BEEN DONE IN THE ABSENCE OF JOB CORPS WORK PROJECTS

	Location of Project		
	On Center	Off Center	All
All work would have been done	11	15	26
Same time/same way	4	12	16
Same time/different way	1	1	2
Postponed/same way	5	2	7
Postponed/different way	1	0	1
Some of the work would have been done	2	1	3
Same time/same way	0	1	1
Same time/different way	0	0	0
Postponed/same way	1	0	1
Postponed/different way	1	0	1
None of the work would have been done	14	1	15
Total	27	17	44

would have been done at the same time and in the same way, even if students had not been available to do the work.

About one-third of the projects (15 out of 44) would *not* have been done at all had students not been available to do the work. For example, one project involved the students building a shade house for storing planting materials. Center staff believed that, although this was a useful addition to the center, they would not have obtained funding for the project if students had not been able to do the work.

The remaining third of the projects would have been delayed, done in a different way, or only partly completed without the students. A frequent response to questions about whether a project would have been done if students had not done the work was that it would have been done *eventually*. This suggests that at the time the work project was done, no-one was willing to pay the supply price. Some projects would have been done differently. For example, a bricklaying project would have had a simpler design if it had not been designed for training. In other projects, only part of the project would have been done. For example, in one VST project, the Forest Service would have bought 100 plant pallets rather than having students build 150.

These responses suggest that for all but 16 of the projects, people would not be willing to pay the supply price for the output. However, we have no information about how much they would be willing to pay.⁸ Each of the projects we studied did, however, produce an output or service of some value.

The likelihood that projects would have been conducted in the absence of VST projects varied by whether the “recipient” of the output or service was Job Corps or an outside agency. Of the 17 off-center projects (13 WE and 4 VST projects), 12 would have been done at the same time in the

⁸In the interviews, we asked respondents how much they would be willing to pay, but most respondents could not respond.

same way in the absence of Job Corps students, and only one would not have been done at all. In contrast, of the 27 on-center projects (all VST), only 4 would have been done at the same time in the same way without Job Corps students and 14 would not have been done at all.

How would our estimate of the value of output differ if for some projects someone would *not* be willing to pay the full supply price? Table III.10 presents estimates of the value of output per student-year under five different assumptions:

1. Someone is willing to pay the supply price for the output. This is our benchmark assumption.
2. Someone is willing to pay the supply price for the output of off-center projects but no one is willing to pay anything for the output of on-center projects.
3. Someone is willing to pay the supply price for the output of off-center projects and someone is willing to pay half the supply price for the output of on-center projects.
4. Someone is willing to pay the supply price for the output of projects that would have been done in the same way and at the same time in the absence of Job Corps students but no one is willing to pay anything for the output of other projects.
5. Someone is willing to pay the supply price for the output of projects that would have been done in the same way and at the same time in the absence of Job Corps students and someone is willing to pay half the supply price for the output of other projects.

Under each of the alternative assumptions, the value of output is lower than under the benchmark assumption. The second and fourth assumptions, while unrealistic, provide a lower-bound estimate of the value of the output. The value of the output is lowest under the fourth assumption--less than one-half the value of the output under the benchmark assumption. Assumptions three and five are perhaps more realistic. Under these assumptions, the value of output is between 72 and 74 percent of the value estimated under the benchmark assumption.

TABLE III.10

ESTIMATES OF THE VALUE OF OUTPUT UNDER DIFFERING
ASSUMPTIONS ABOUT THE WILLINGNESS TO PAY FOR THE OUTPUT
(Weighted)

Assumption	Value Per Year Per Enrollee
Baseline: Willingness to pay is equal to the supply price for all projects (44 projects)	\$788.79
Willingness to pay is equal to the supply price for all off-center projects (17 projects) and 0 for on-center projects (27 projects)	\$381.69
Willingness to pay is equal to the supply price for all off-center projects (17 projects) and half the supply price for on-center projects (27 projects)	\$585.24
Willingness to pay is equal to the supply price for all projects that would have been done in the same way at the same time (16 projects) and 0 for other projects (28 projects)	\$340.79
Willingness to pay is equal to the supply price for all projects that would have been done in the same way at the same time (16 projects) and half the supply price for other projects (28 projects)	\$564.79

2. Job Corps Students Do Not Displace Other Workers

We assume that the additional work done by Job Corps students on work projects is not offset by a reduction in work done by other professional workers. This assumption would be incorrect if students do work on VST and WE projects that would have been done by professional workers who are unemployed or underemployed. If during work projects students displace professional workers, our estimates will overstate the value of the work projects.

Displacement is most obvious if an organization fires or lays off a worker and replaces them with a Job Corps student who works for free. Job Corps regulations explicitly prohibit this form of displacement. On VST projects, the regulations state “VST projects must not displace currently employed or contractually-required workers or impair existing contracts for services” (DOL1993, PRH-4 p. 11). On WE projects, the regulations state that “work experience students shall not be utilized to replace regular employees, either on or off center” (DOL 1993, PRH-4, p. 27). Based on discussions with staff involved with the 44 sample projects, we found no evidence that Job Corps students displaced workers in this way. No respondent said that workers had been fired or laid off because of the work projects or that the students replaced workers who had quit their job.⁹

A less obvious form of displacement may occur if an organization (such as the center or a community agency) did not hire workers who are unemployed or underemployed because Job Corps students were available to do the work. Without a detailed study of the labor markets affected by the work projects, which would be beyond the scope of our study, we cannot determine whether Job Corps students displace other workers in this way. However, students clearly could not have displaced other workers in projects that would not have taken place in the absence of work projects (reportedly 15 projects). And even in projects which may have been done by professional workers

⁹The Job Corps regulations regarding displacement may have affected the answers we received to questions about displacement.

in the absence of work projects, displacement would only have occurred if the professional workers were underemployed or unemployed. When using the relative-productivity approach, we asked respondents how easy it was for the “alternative workers” to find work. All replied that it was as easy or easier than average for the community. And Job Corps trains students only in vocational trades for which there is thought to be a demand for the skills and hence a tight labor market for the alternative worker.

3. All Costs and Benefits Are Reflected in the Supply Price

Sometimes persons other than the producer or purchaser of a product or service incur costs or benefits from the product or service that are not reflected in the price. Economists refer to these costs or benefits as externalities. An example of an externality would be if the students made improvements to the outside of a building that were enjoyed by members of the community as well as the owner of the building. If there are externalities, depending on the nature of the externality, the supply price will be either greater than or less than the true value of the output. However, we found no evidence of significant externalities for any of the projects we studied.

4. The Students’ Output Is of Similar Quality to That of Professional Workers

The supply price will only be a good measure of the value of the students’ output if the quality of the students’ output is similar to that of professional workers. The supply price will overstate the true value of the students’ output if it is of lower quality than that produced by a professional. Conversely, the supply price will understate the true value of the output if students produced output of higher quality than a professional.

We asked the VST coordinator (for on-center projects) and a representative of the outside agency (for off-center projects) to assess the quality of the students’ work relative to that of a

professional.¹⁰ Table III.11 summarizes their responses.¹¹ The students' work was of professional quality in the majority of projects. For just less than one-quarter of the projects (4 WE and 6 VST projects), the students were said to have produced output or services that were superior in quality to the alternative worker or a professional contractor. The students work was inferior in quality to the alternative worker or a professional contractor for only four projects.

When asked about the quality of the students work, many center staff said that Job Corps required students' work to be of professional quality. Students are not sent on WE assignments until they have the skills to produce output of the same quality as a professional worker. During VST projects, students will repeat their work until it is of professional quality, taking longer than their professional counterparts but producing output of the same quality.¹²

5. Summary

Our studies of 44 projects suggest that our estimates of the value of output are unlikely to be significantly biased upward because of displacement, benefits or costs not reflected in the supply price, or differences between the quality of the output produced by the students and professional workers. However, our assumption that someone would pay the supply price for the output is unlikely to be correct for all work projects. Hence, our estimates of the value of output produced during work projects of \$789 per student-year should be viewed as an upper-bound estimate.

¹⁰For several on-center VST projects, we also asked the instructors and outside contractors to assess the work of the students. The assessments differed in only one case.

¹¹When more than one assessment of quality was available, we counted the lowest assessment.

¹²It was found that students took three times as long as professional workers in the two VST projects that were studied by the relative-productivity approach.

TABLE III.11

ASSESSMENT OF THE QUALITY OF STUDENTS' OUTPUT
COMPARED WITH THAT OF PROFESSIONAL WORKERS

Assessed Quality Compared With Professional Worker	Number of Projects
Same quality	30
Higher quality	10
Lower quality	4
Total	44

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